

CLAIMS

1. Safety system for a liquid fuel tank (1), comprising:
 - a) a fill tube (2) terminating in a tank (1), the inlet orifice (3) of the tube (2) including a guide (4) for a nozzle (5) provided with a sealing device (6) for
5 sealing against the external environment;
 - b) a valve (7), mounted on the tank (1), capable of degassing the tank (1) during an operation of filling with fuel, and also of venting during periods when the tank is in normal use; and
 - c) a vapour breather pipe (8) that also fixes the maximum level of liquid fuel in
10 the tank (1),

characterized in that the pipe (8) emerges at one of its ends (9) in the top of the tank (1), connects this top to the upper portion of the fill tube (2) and emerges at its other end (10), at a point located downstream of the sealing device (6), on the side facing the tank (1), and in that the pipe (8) is completely located inside both
15 the tank (1) and the fill tube (2).
2. System according to the preceding claim, characterized in that the pipe (8) emerges in the top of the tank (1) via a float valve.
3. System according to either of the preceding claims, characterized in that the valve (7) has a float (11), the said valve being normally open when
20 filling the tank (1) and during the periods of normal use of the tank (1), and in that the float line of the float (11) is set so that the valve (7) is closed only in two circumstances, namely when the tank (1) is inclined beyond a predetermined limit, or even completely upside down, and during a transient movement of the fuel, the amplitude of which exceeds a predetermined value.
- 25 4. System according to any one of the preceding claims, characterized in that the sealing device (6) comprises an annular seal having at least one circular lip (12) made of a flexible elastomer and intended to bear on the circumference of the spout of the nozzle (5).
5. System according to the preceding claim, characterized in that the
30 sealing device (6) furthermore includes, downstream of the lip (12), a

stopper (14) that can open under the effect of the pressure caused by contact with the end of the spout of the nozzle (5).

5 6. System according to any one of the preceding claims, characterized in that it furthermore includes a safety valve (15) which can open only towards the external atmosphere (17) in the event of excessive overpressure in the tank and which brings the inside (16) of the fill tube into communication with the external atmosphere (17) in the vicinity of the nozzle (5).

10 7. System according to the preceding claim, characterized in that the safety valve (15) is an annular lip made of elastomer that extends the sealing device (6) upstream, on the side facing the inlet orifice (3) of the tube (2).

8. System according to Claim 6, characterized in that the safety valve (15) is a non-return valve independent of the sealing system (6) and located in the guide (4) for the nozzle (1), near the latter.

15 9. System according to any one of the preceding claims, characterized in that at least one external surface layer of the pipe (8) is electrically conductive and in that this pipe is connected via an electrical conductor to a metal earth of a vehicle on which the tank (1) is mounted.

20 10. System according to any one of Claims 1 to 7, suited to nozzles (5) that are not provided with fuel vapour suction systems, characterized in that the valve (7) is connected to a canister (18) filled with a material that absorbs the fuel vapour and in that the volume of the canister (18), the size of the valve (7) and the diameter of the pipe (19) connecting the valve to the canister (18) are designed so as to be capable of evacuating most of the volume of gas escaping from the tank (1) during the filling operation.

25 11. System according to any one of Claims 1 to 9, characterized in that the outlet of the valve (7) emerges in the external atmosphere (17) without passing via a canister.